

5 **WHAT IS CLAIMED IS:**

1. An autofocus module for a microscope-based system, comprising:
 - an objective that defines an image beam path which is perpendicular to a surface of a specimen
 - 10 - an illumination beam path that encompasses a light source for illumination of the specimen,
 - a light source for generating a measurement light bundle for determining a focus position;
 - an optical means for splitting the measurement light bundle in such a way that an eccentrically extending measurement light beam bundle is created;
 - 15 - a first dichroic beam splitter is provided in the image beam path of the microscope-based system, which couples the measurement light beam bundle eccentrically into the microscope-based system and directs it onto the surface of the specimen;
 - 20 - the optical means directs onto a detector element a measurement light beam bundle remitted from the microscope-based system; and
 - a cylindrical lens between the detector element and the optical means.
- 25 2. The autofocus module as defined in Claim 1, wherein the optical means is embodied as a prism that has one fully mirror-coated prism surface and one prism surface for total reflection, the mirror-coated prism surface generating, from the measured light bundle, an eccentrically extending measurement light beam bundle.
- 30 3. The autofocus module as defined in Claim 1, wherein the detector element is a two-dimensional area sensor.
4. The autofocus module as defined in Claim 1, wherein the detector element comprises at least two linear sensors arranged parallel to one another.
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- 5 5. The autofocus module as defined in Claim 1, wherein displacement means
are provided which incline the detector element with respect to a plane
defined by the surface of the specimen.
6. The autofocus module as defined in Claim 1, wherein a displacement means
10 is provided which inclines the detector element exclusively about an axis
that is parallel to the X axis of a Cartesian coordinate system.
7. The autofocus module as defined in Claim 1, wherein the light source, the
detector element, the optical means, the cylindrical lens, the stationary lens
15 and a displaceable lens, a second dichroic beam splitter, and the
displacement means are arranged in a housing
8. The autofocus module as defined in Claim 7, wherein the lens is
displaceable in manual or motorized fashion in the direction of a dashed
20 double arrow.
9. The autofocus module as defined in Claim 7, wherein housing can be
attached to the microscope-based system.
- 25 10. The autofocus module as defined in Claim 1, wherein the light source is a
laser light source.
11. The autofocus module as defined in Claim 10, wherein the laser light source
emits IR light as the measurement light.
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12. The autofocus module as defined in Claim 1, wherein the microscope-based
system and the autofocus module are connected to a computer.